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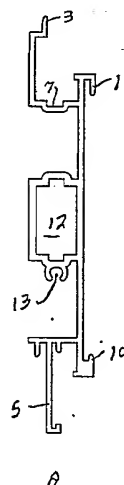
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⑤④ Display panels and their mounting.

⑤⑦ The invention provides extruded aluminium, aluminium alloy or synthetic plastics display panels for upright use which panels comprise means 10, 11 at at least one side thereof for the reception of a gravity maintained display surface, said means 10, 11 of the or each panel being formed adjacent to lips 2 to which latter profiled upper tongues 3 and lower tongues 5 are connected so as to project upwardly and downwardly, respectively, from the top and bottom of the remainder of the panel, each tongue 3 defining a slot 7 in which a portion of the tongue 5 of an adjoining panel will fit retainingly and each tongue 5 being flanked by a slot 4 in which a portion of the tongue 3 of another adjoining panel will fit retainingly.



Description

DISPLAY PANELS AND THEIR MOUNTING

This invention relates to extruded aluminium alloy and other display panels of which there are numerous known kinds such, purely for example, as those described in GB-A-2039119 and GB-A-2160003.

The present applicants already market, under the Registered Trade Mark "Octanorm", a large range of items for use in shopfittings, displays, exhibitions and the like and an object of the present invention is to provide display panels which overcome certain disadvantages exhibited by known equipment and which will co-operate exceptionally well with the applicants' "Octanorm" apparatus that is already in use whilst by no means being restricted solely to such co-operation.

Many of the accompanying drawings are cross-sectional illustrations and, unless obvious or otherwise stated, the features that can be seen in such views extend throughout the lengths of the components concerned. These components comprise a number of light-weight metallic extrusions which will usually be aluminium or aluminium alloy extrusions, these extrusions fitting together in a complementary manner. Some extruded items may conveniently be formed from a synthetic plastics material. The extrusions may be finished in a standard matt or gloss white paint but, where required for any particular purpose, they may be furnished with a polished metallic finish or an anodised silver finish. Other possibilities include etching and anodising to provide a silver finish, applying an epoxy resin powder coating containing an appropriate coloured pigment, colour dying the extrusions and anodising them or using any one of a number of other proprietary finishes that are available.

Display panels in accordance with the invention may be arranged to exhibit a display surface at only one side or, alternatively, at two opposite sides, the double-sided version incorporating a top extrusion which presents an attractive and relatively safe rounded edge where that rounded edge is positioned below normal adult eye-level. The single-sided version, on the other hand, co-operates with a different top extrusion which may be "finished off" in any of a number of different ways. A further extrusion is designed to be employed as a skirting or "kicker" at floor-level where the single-sided form of panel is applied directly to an existing wall surface, the skirting or "kicker" also acting to take up or overcome any horizontal irregularities in that floor surface so as to provide a truly horizontal mounting line upon which the principal panel extrusions can be based.

For a better understanding of the invention, and to show how the same may be carried into effect, reference will now be made, by way of example, to the accompanying drawings, in which:-

Figures 1A to 1E inclusive are cross-sections of five aluminium or aluminium alloy extrusions which can be selectively used in accordance with the invention,

Figure 2 is a cross-section showing the

details of a junction between two extrusions and the way in which an infill strip is inserted at the rear of a channel defined between the two extrusions,

Figures 3A to 3D inclusive illustrates the way in which an infill strip is readily installed or removed from that face of an extrusion that will be exposed in the use thereof,

Figure 4 is a perspective view showing a junction between upper and lower extrusions and the way in which hooks and brackets can be mounted to project from the exposed surface thereof,

Figure 5 is a cross-sectional view, to an enlarged scale as compared with Figure 4, showing junctions between vertically superposed extrusions each fitted with an infill strip and with one of the brackets that can be seen in Figure 4 shown in greater detail and in a mounted position,

Figure 6 is a similar view to Figure 5 but shows the superposed extrusions without infill strips and with the extruded bracket provided with a compensating synthetic plastics insert,

Figure 7 is again similar to Figure 5 but, in this case, shows the extrusions provided with infill strips and the arrangement of a pressed bracket or the like, affording a hook or other feature, disposed in a mounted position and provided with a thin compensating packing at the rear thereof,

Figure 8 is very similar to Figure 7 but shows the extrusions without infill strips and with a thicker compensating synthetic plastics insert at the rear of the bracket,

Figures 9A and 9B are, respectively, a perspective view showing the way in which an "Octanorm" (Registered Trade Mark) tension lock is fitted into one end of a chamber formed integrally with an extruded panel in accordance with the invention, and (9B) a sectional plan view showing the tension lock of Figure 9A installed in the chamber and co-operating with a slotted opening in a known extruded "corner" upright,

Figures 10A, B and C are, respectively, (10A) a perspective view showing the way in which a relatively thick metal tongue is fitted into one of the integral chambers of one of the extruded panels, (10B) a perspective view illustrating the metal tongue actually fitted in the chamber and protruding therefrom, and (10C) a sectional plan view showing the protruding end of the tongue entered into a co-operating opening in one of the known "corner" uprights,

Figure 11 is a perspective view illustrating the construction and arrangement of a skirting or "kicker" assembly with other panels in accordance with the invention superposed thereabove, and,

Figures 12A, B, C and D are cross-sectional

views illustrating the simple way in which an infill board may be inserted into, and removed from, a skirting or "kicker" assembly as shown in Figure 11.

Referring to the accompanying drawings, and firstly to Figure 1 thereof that shows five basic aluminium or aluminium alloy extrusions, Figures 1A and 1B show extrusions particularly intended for single-sided installation with infill strips at their right-hand sides whereas Figure 1D shows an extrusion intended to receive infill strips at both its opposite sides and Figure 1E shows an extrusion intended to be used at the top of an installation, its own upper extremity being smoothly rounded to exhibit no sharp edges.

Figure 2 illustrates a junction between two superposed extrusions and, by a comparison with Figure 1, it will be seen that the lower edge region of one of the extrusions of Figure 1A, 1B, 1D or 1E is co-operating with the upper edge region of one of the extrusions of Figure 1A. The joint or junction between the two extrusions is so designed that a single channel 1 is effectively formed with the co-operating edge regions of the two extrusions adequately supported when under load thereby minimising any possibility of distortion of the channel or of the lips at the mouth thereof. The channel 1 shown in Figure 2 has lips 2 that are provided with a lower ear 10 and an upper ear 11, respectively. The design provides for extrusions to be mounted strictly horizontally to form, in conjunction with other similar extrusions, a vertical display surface, the extrusions being designed to interlock with one another to give rigidity by way of their mutual support and to define the horizontally extending channels 1 throughout their lengths. The lips 2 define an entrance slot of vertically reduced width, said lips 2 and their respective ears 10 and 11 affording a means for fixing display materials of many types to the vertical surfaces at the left side of Figure 2, it also being possible to mount shelves, hooks and the like for the display of merchandise of many different kinds. Positioning of displays and/or merchandise is thus very flexible and can be changed at will to suit the prevailing requirements. Although distorted, the lips 2 are of basically T-shaped cross-section and this shape gives a particularly strong configuration as compared with many known arrangements in which natural wood or artificial, but wood-based, constructions predominate.

Under most, but not necessarily all, circumstances, the lowermost extrusion will be fixed in place first and the extrusions that are to be superposed thereon will be mounted thereabove one after the other until the desired uppermost level is reached. Where the extrusions are to be used to clad an existing non-timber wall or other upright surface without the use of auxiliary framing or the like, it is best that said wall or other upright surface should first be provided with a series of vertically extending battens or the like to which the horizontally extending extrusions can be secured, said battens or the like being arranged to present as accurate a vertically planar surface as possible and being spaced apart by distances which will be entirely

adequate reliably to support the maximum expected loading which will be carried by the horizontally extending extrusions which are secured to those battens or the like.

Referring again to Figure 2 of the drawings, the lower edge region of one extrusion (at the left of Figure 2) is connected to the upper edge region of the extrusion beneath it (at the right of Figure 2) with the aid of an upwardly projecting and slightly chamfered tongue 3 at the top of the upper edge region of the lower extrusion concerned. This tongue 3 enters a slot 4 formed towards the rear of the co-operating upper extrusion, a downwardly directed rib defining the rear surface of the slot 4 also having a slight entry chamfer. In addition, a much larger downwardly directed tongue 5 that defines the front surface of the slot 4 has its lower extremity bent-over twice through 90° to form a short upwardly directed ear 8, that ear 8 and the lower extremity of the tongue 5 itself fitting, as shown in Figure 2, in a relatively broad slot 7 formed in a rearward projection of the upper edge region of the lower extrusion which rearward projection terminates in a vertically upwardly extending flange 6 whose upper edge, in turn, carries the aforementioned tongue 3 in a forwardly offset position. Wood screws or other fastenings may be employed to secure the flange 6 to the aforementioned battens or the like and it will be realised that the heads of the wood screws or other fastenings will be located at the back of the channel 1 and will be concealed from view by the tongue 5 that will lie in front of them. This tongue 5 will present a plain surface towards the right side (as shown, the top) of Figure 2 and, if desired, that plain surface may be concealed by entering a coloured synthetic plastics laminate or other strip 30 into a location between the ear 8 and a co-planar upper ear 8 disposed just in front of the upper root end of the tongue 5. As will be seen in Figure 2, the strip 30 can quickly and easily be placed in its appointed position by entering its upper edge behind the upper ear 8 to such an extent that its lower edge will clear the lower ear edge 8 behind which the strip 30 will then be reliably retained by gravity in substantially the position that can be seen in Figure 2 of the drawings.

In an installation which is to be one-sided as regards display, any space remaining between the uppermost extrusion and, for example, an overlying ceiling, can be sealed in or clad by a relatively thin and relatively light-weight decorative panel formed in any one of the materials which are traditionally used for such purposes. The lower edge of such a panel will be lodged in the relatively broad slot 7 (Figure 2) of what will then be the uppermost of the superposed extrusions whilst the upper edge of the panel can be engaged in a length of the skirting or "kicker" extrusion 38 that will be referred to below, this latter extrusion 38 being secured to the ceiling in question.

The what would otherwise be exposed ends of the various extrusions at, for example, the corners between vertical surfaces or at blank ends of vertical walls and the like, are preferably completed by co-operation with known uprights such as those that are illustrated in Figures 9B and 10C of the drawings,

these uprights being available commercially under the Registered Trade Mark "Octanorm". The ways in which the ends of the horizontally extending extrusions that have been described can co-operate lockingly, if required, with such uprights will be described below. It is not essential that uprights of the kind just mentioned should be employed and, where desired or appropriate, other vertically extending trims in wood, metal or synthetic plastics materials may be employed as alternatives.

The principal display surfaces of the various extrusions may, when required, be fitted with relatively broad infill strips of plain or coloured synthetic plastics laminate or other basically planar but marginally flexible material, such a strip being denoted by the reference 9 in Figures 3A to 3D of the drawings. The four parts of Figure 3 show the way in which such a strip 9 is installed. The installation is carried out in the known "lift, tilt and drop" manner, the strip 9 having a vertical width which is a little less than is the distance between the lower ear 10 of one extrusion and the other ear 11 of the same extrusion. The upper edge of the strip 9 is first entered behind the ear 11 by urging it in the direction indicated by an arrow "1" as shown in Figure 3A of the drawings, the lower edge of the same strip 9 is then tilted rearwardly in the direction indicated by an arrow "2" in the same Figure, the upper edge of the strip being raised so far behind the ear 11 that said lower edge will clear the ear 10. This position is shown in Figure 3B, the lower edge of the strip 9 being moved over the lower ear 10 in the direction indicated by an arrow "3" in Figure 3B until the position shown in Figure 3C is reached. Gravity, sometimes aided by a gentle push, will then move the strip 9 downwardly in the direction indicated by an arrow "4" in Figure 3C to bring it to the installed position shown in Figure 3D where its lower edge is behind the ear 10 and its upper edge is behind the ear 11. Removal is, of course, effected merely by reversing the actions just described. Where access to at least one axial end of an extrusion is freely available, any infill strip, such as the strip 9, can, of course, be slid lengthwise between the ears 10 and 11 without it being necessary to act as just described with reference to Figures 3A to 3D of the drawings.

Each of the principal extrusions, with the exception of the skirting or "kicker" extrusion 38, incorporates features that are intended for use where the extrusions horizontally bridge the spaces between battens or other vertical members which, as briefly mentioned above, can be formed from wood and/or from metal, known uprights of various kinds that are available commercially under the Registered Trade Mark "Octanorm" being particularly, but not exclusively, suitable for this purpose.

Figure 4 of the drawings illustrates two superposed extrusions that are connected to one another by a junction that is of the kind which has been described with reference to Figure 2 of the drawings. However, Figure 4 also shows a short length of a separate extrusion which affords a bracket 16. This bracket 16 will not normally extend throughout the length of one of the principal extrusions that has been described but, of course, its axial extent is

variable to match the loading to which it may be subject when in use. In fact, the bracket 16 creates the basis of a range of fittings for the display of merchandise of many types. Each bracket 16 may have a hook, a shelf support or other items secured to it, said bracket 16 exhibiting an upper flange terminating in a forwardly bent-over hooking tip 17. The tip 17 engages behind the lower inverted T-shaped ear 19 at the front of the lower edge region of one of the principal extrusions, said ear 19 being identical in shape and function to one of the previously described ears 11. In fact, the leading edge of the tip 17 bears against, or is very close indeed to, the rear face 18 of the extrusion in question where that rear face partially defines one of the previously mentioned channels 1. The hooking portion of the bracket 16 that defines the tip 17 includes a shank 20 which, when the bracket 16 is installed, bears vertically down upon the upper basically T-shaped ear 21 of the immediately underlying principal extrusion, it again being evident that the ear 21 is identical in shape to one of the previously described ears 10. There is a rearwardly opening slot 24 in a lower rear region of the bracket 16 which slot 24 is partially defined, at its lower side, by a rearward projection 22. When, as shown in Figure 5 of the drawings, infill display strips 9 are supported on the display surfaces of the various principal extrusions, the projection 22 bears directly against the front exposed surface of one of those infill strips 9. When, on the other hand, no infill strip 9 is present, an extruded synthetic plastics compensator 23 (Figure 6) of basically T-shaped cross-section has its retainingly ribbed upright entered into the slot 24 in such a way that the convexly curved surface of its crossbar bears against the uncovered "display" surface of the principal extrusion in question. The compensator 23 thus ensures that the bracket 16 will adopt the same position relative to the principal extrusions as it does when, as shown in Figure 5, one of the infill strips 9 is present. Any brackets 16, with or without the compensators 23 as required, may be very quickly and easily mounted on, or removed from, the principal extrusions at any chosen locations lengthwise therealong.

Figure 4 also shows the provision of a simple double right-angled cranked pressed metal backplate 25 from the front of which fixedly projects a rod 31. The rod 31 may serve as a horizontal support to which shelving or other items may be secured by clips or in other ways or could, of course, be shaped to form a hook. Rods, arms, shelf brackets and the like may be welded to the rods 31 and it is noted that many supports having backplates somewhat similar to the illustrated backplates 25 are available commercially, a large number of such items being directly compatible with the principal extrusions that have been described as regards suspended co-operation with the channels 1 which those extrusions define. Commercially available fittings made to co-operate with perforated hardboard ("peg board") that is substantially 6.35mm. in thickness will also, in many cases, co-operate effectively with the principal extrusions, little, if any, modification being necessary to facilitate this.

Figure 7 of the drawings illustrates the installed position of one of the backplates 25 when used where there are synthetic plastics or other infill "display" strips 9 carried on the front display surfaces of the principal extrusions in the manner that has previously been described. Under these circumstances, the rear of each backplate 25 carries, at a short distance above the lowermost edge of the backplate 25, a relatively thin synthetic plastics spacer 32 whose rear surface bears against the exposed front surface of the strip 9 both to prevent damage to that strip 9 and to maintain the major portion of the backplate 25 in substantially strictly parallel relationship with the major vertically disposed portion of the co-operating principal extrusion.

Figure 8 of the drawings is similar but, in this case, there are no infill strips 9 so that, accordingly, the relatively thin spacer 32 of Figure 7 is replaced by a relatively thick spacer 33 which, apart from its thickness, is identical to the spacer 32. Once again, the provision of the spacer 33 ensures that the major portion of the backplate 25 will be in substantially strictly parallel relationship with the major portion of the co-operating principal extrusion.

It will be noted that most of the principal extrusions, whether intended for single-sided or double-sided display, incorporate an axially extending tubular lock chamber 12 which chamber 12 is located to the rear of the single "display" surfaces of a single-sided principal extrusion or between the two staggered and opposed "display" surfaces in the case of a double-sided principal extrusion as shown in, for example, Figure 1D of the drawings. The exact cross-sectional shape of each chamber 12 is clearly visible in many of the Figures of the accompanying drawings and it is noted that this shape is one which will readily receive a so-called tension lock that is commercially available under the Registered Trade Mark "Octanorm". This tension lock is generally indicated by the reference 34 in Figure 9A of the drawings and, when it is inserted into one of the chambers 12, it can be tightened into a fixed position, using a supplied "key", in which position the projecting tongue 35 of the lock 34 can co-operate with a slotted opening 36 in an "Octanorm" (Registered Trade Mark) corner upright 37. It will immediately be apparent, from Figures 9A and 9B of the drawings, that a number of superposed principal extrusions as already described can each be fixedly but releasably secured to the upright 37 and that a second similar series of principal extrusions can also be secured to the same upright 37 in a general plane that is at right-angles to the first series.

Each chamber 12 is associated (either immediately above or immediately beneath that chamber depending upon its disposition when in use) with a part-cylindrical recess 13 into which, as is basically known *per se*, can be entered the screw-threaded shank of a self-tapping screw that will cut its own receiving thread internally of the recess 13. Thus, the axial ends of extrusions can be directly connected to metallic, natural wooden or wood-based artificial materials or to other trim materials by such self-tap-

ping screws without any other preparatory work being necessary. This can be very useful and time-saving when an installation is being made or is being dismantled.

Figures 10A, 10B and 10C of the drawings are generally similar to Figures 9A and 9B but show how two symmetrically opposed upper and lower recesses 14 at the top and bottom of each lock chamber 12 are employed. A gently tapered metallic wedge 15 is hammered into the lock chamber 12 as shown in Figure 10A in such a way that its outwardly diverging upper and lower edges enter the two opposed recesses 14. When fully hammered home, the wedge 15 will project from the mouth of the lock chamber 12 in the manner shown in Figure 10B and may then be entered into one of the openings 36 in an upright 37 as shown in Figure 10C of the drawings in place of the tension lock 34 that is shown in Figures 9A and 9B. Thus, where a number of principal extrusions are to be fixed to an upright 37 only, perhaps, the uppermost and lowermost principal extrusions and, perhaps, one or two intermediate ones actually require the provision of tension locks 34 whereas the intermediate principal extrusions need only be fitted with the wedges 15. This provides an economy in both components and costs whilst still providing an entirely reliable connection of the principal extrusions to uprights such as the "corner" upright 37.

Figures 11 and 12 of the drawings illustrate the way in which the skirting or "kicker" extrusion 38 of Figure 1C is employed. This skirting or "kicker" extrusion 38 is, of course, secured to the exposed face of an upright wall or other upright surface by screws or other fastenings that will be concealed in use. A relatively broad in vertical width and relatively thick display board 39 may be installed between the skirting or "kicker" extrusion 38 located at substantially floor-level and a second similar extrusion 38, arranged the same way up, at substantially the level of the upper edge of the board 39. It will be apparent from both Figures 11 and 12 of the drawings that the upper extrusion 38 co-operates with the lower edge region, and particularly with the tongue 5, of one of the previously described principal extrusions. A full description of Figures 12A, 12B, 12C and 12D is not required since those Figures show how one of the display boards 39 is installed between, or removed from between, the two extrusions 38, the installation or removal being substantially identical to that which has already been described with reference to the four parts of Figure 3 of the drawings. However, it is noted that the lower edge of the installed display board 39 bears downwardly upon a synthetic plastics foam or other relatively thick compressible strip 40 lodged in the lower extrusion 38. Should the floor be somewhat uneven so that the lower extrusion 38 does not extend strictly horizontally, the compressible foam strip 40 will accommodate any minor inaccuracy and will allow the overlying principal extrusions to extend strictly horizontally even though the lowermost skirting or "kicker" extrusion 38 is not entirely accurately positioned as regards its strictly horizontal extent.

Where desired, and subject to compliance with

statutory regulations, electric wiring and/or ducts to carry gas, water and so on may be entered through the channels and other voids in the principal extrusions in both the single-sided and double-sided versions thereof, such wiring and/or ducts being brought out to accessible locations through apertures of appropriate sizes drilled and/or punched through the main "display" surfaces of the principal extrusions. Although the principal extrusions will usually extend strictly rectilinearly, they may, where required, be curved into convex and/or concave configuration, as seen in plan view, by known mechanical rolling equipment, it being possible to produce curved configurations of quite a small radius equivalent to the minimum that is ever likely to be required. With such a construction, a cross-section taken at any location will still extend generally vertically whilst the principal extrusions concerned will be curved in their longitudinal directions.

It will be apparent that the principal extrusions which have been described and which are illustrated in the drawings are not the only possible configurations. In particular, the channels may be spaced apart from one another by different distances and, where one principal extrusion is of reduced vertical width as compared with the extrusions that have been described, a single such principal extrusion may itself incorporate at least one complete channel and may exhibit slots and other features at locations between its opposite upper and lower edges. Where required, the metal of each principal extrusion may be formed with a V-shaped groove and the or each such groove may be employed as a guide for the shanks of fixing screws, nails and other fastenings.

Claims

1. A display panel (Figure 1) for upright use comprising means (10, 11) at at least one side thereof for the reception of a gravity maintained display surface (9), characterised in that said means (10, 11) are formed adjacent to lips (2) to which latter a profiled tongue (3) is connected so as to project upwardly from the top of the remainder of the panel and a profiled tongue (5) is connected so as to project downwardly from the bottom of the remainder of the panel, the upper tongue (3) defining a slot (7) in which a portion of the lower tongue (5) of an adjoining panel will fit retainingly and the lower tongue (5) being flanked by a slot (4) in which a portion of the upper tongue (3) of another adjoining panel will fit retainingly.

2. A display panel according to claim 1, characterised in that it also defines a lock chamber (12) shaped to receive a tapering wedge (15) or a lock (34), the wedge (15) or the lock (34) being capable of projecting laterally in the general plane of the panel for fixing co-operation with an opening (36) in an upright (37).

3. A display panel according to claim 1 or 2, characterised in that it is provided with at least one part-cylindrical recess (13) for the recep-

tion of the shank of a self-tapping screw to facilitate connection to metallic or natural or artificial wooden materials.

4. A display system which employs at least one display panel according to any one of claims 1 to 3, characterised in that the system also includes the use of a skirting member (38), the skirting member (38) being shaped to define means for the reception of a lower edge region of a display surface (39) in such a way that said display surface (39) may extend upwardly between the top of one skirting member (38) and the bottom of a further similar and substantially parallel member (Figure 11).

5. A display system according to claim 4, characterised in that said system also includes the use of at least one bracket (16), the or each bracket (16) incorporating a hooking portion arranged to engage in a channel (1) formed between the upper and lower edge regions of two superposed display panels.

6. A display system according to either claim 4 or claim 5, characterised in that the system also includes the use of at least one peg (31) projecting from a backplate (25), the backplate (25) being shaped to engage in a channel (1), or said channel (1), formed between the upper and lower edge regions of two superposed display panels.

7. A display system according to claim 5 and claim 6, characterised in that the or each bracket (16) and the or each peg (31) includes an insert (23, 32, 33) which inserts (23, 32, 33) are selectively usable in dependence upon whether or not any display surface (9) is arranged between the supporting means (10, 11) of an immediately adjacent display panel.

8. A display system according to any one of claims 4 to 7, characterised in that said skirting member (38) accommodates a relatively thick compressible strip (40) whereby any deviation of that member (38) from a horizontal disposition can be accommodated by appropriate progressive compression of said strip (40).

9. A display system as claimed in any one of claims 5 to 8, characterised in that the rear of a chamber (1), or of said chamber (1), that is formed between the or each superposed pair of display panels is concealed by a strip (30) lodged between an upwardly projecting ear (8) at the foot of the corresponding lower tongue (5) and another downwardly projecting ear (8) flanking the same lower tongue (5) alongside the root end of that tongue (5).

10. A display system according to any one of claims 4 to 9, characterised in that the or each display panel of the system is in the form of an aluminium, aluminium alloy or synthetic plastics extrusion.

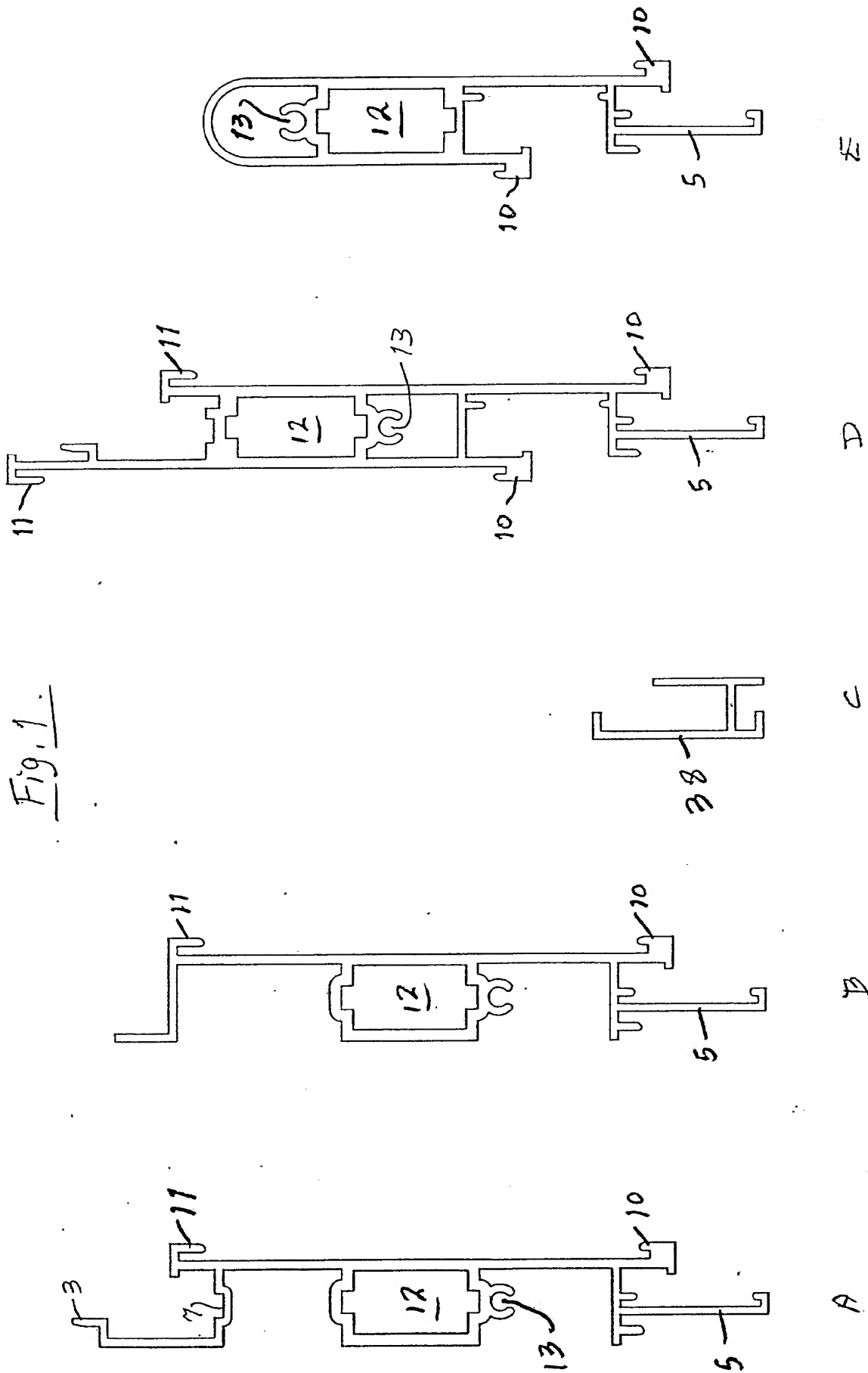


Fig. 2.

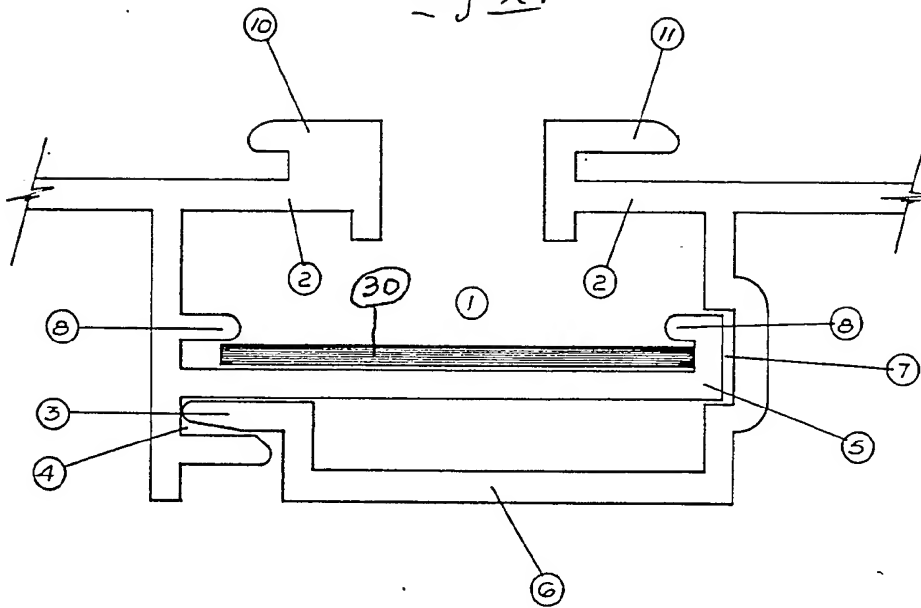
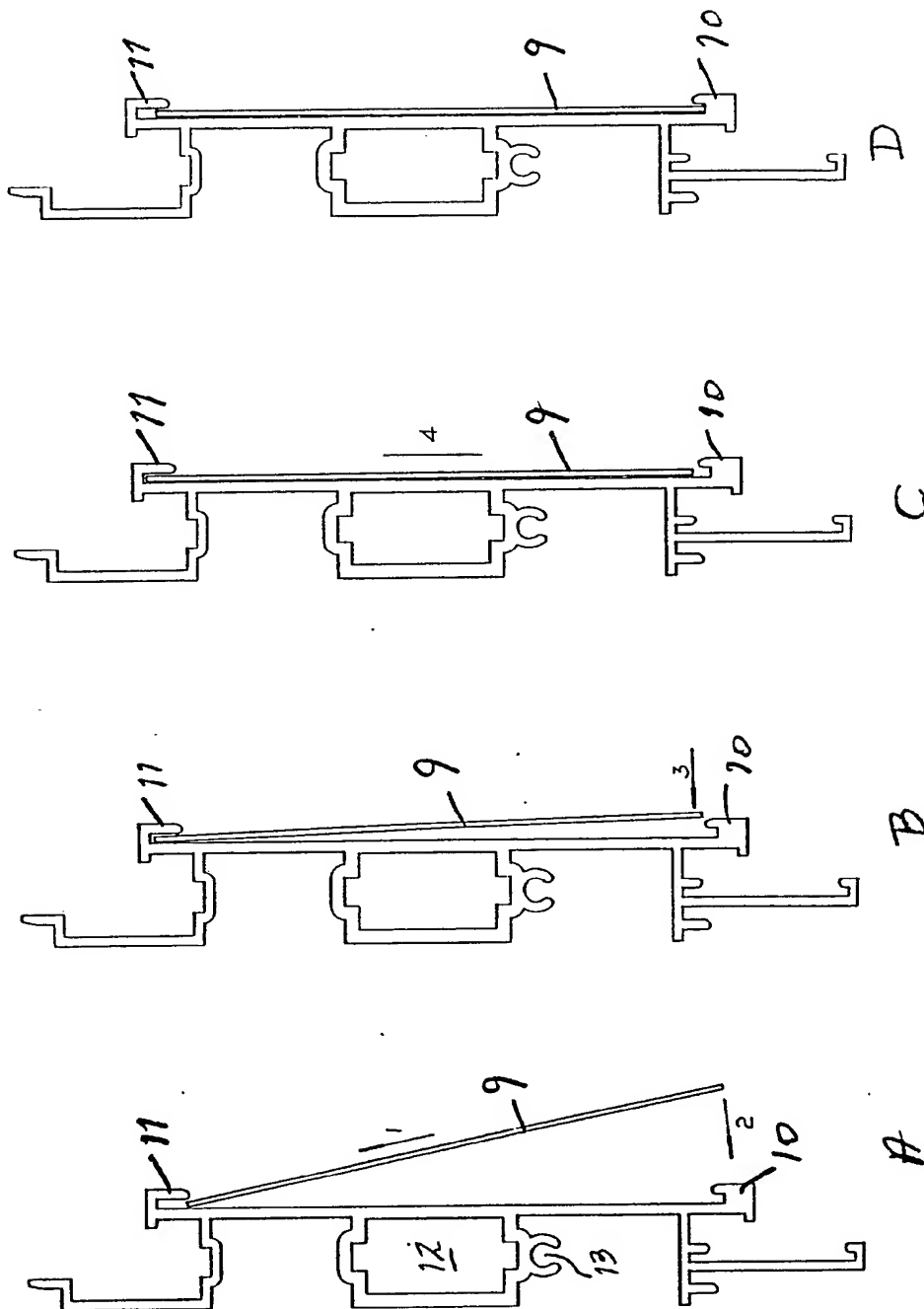


Fig. 3.



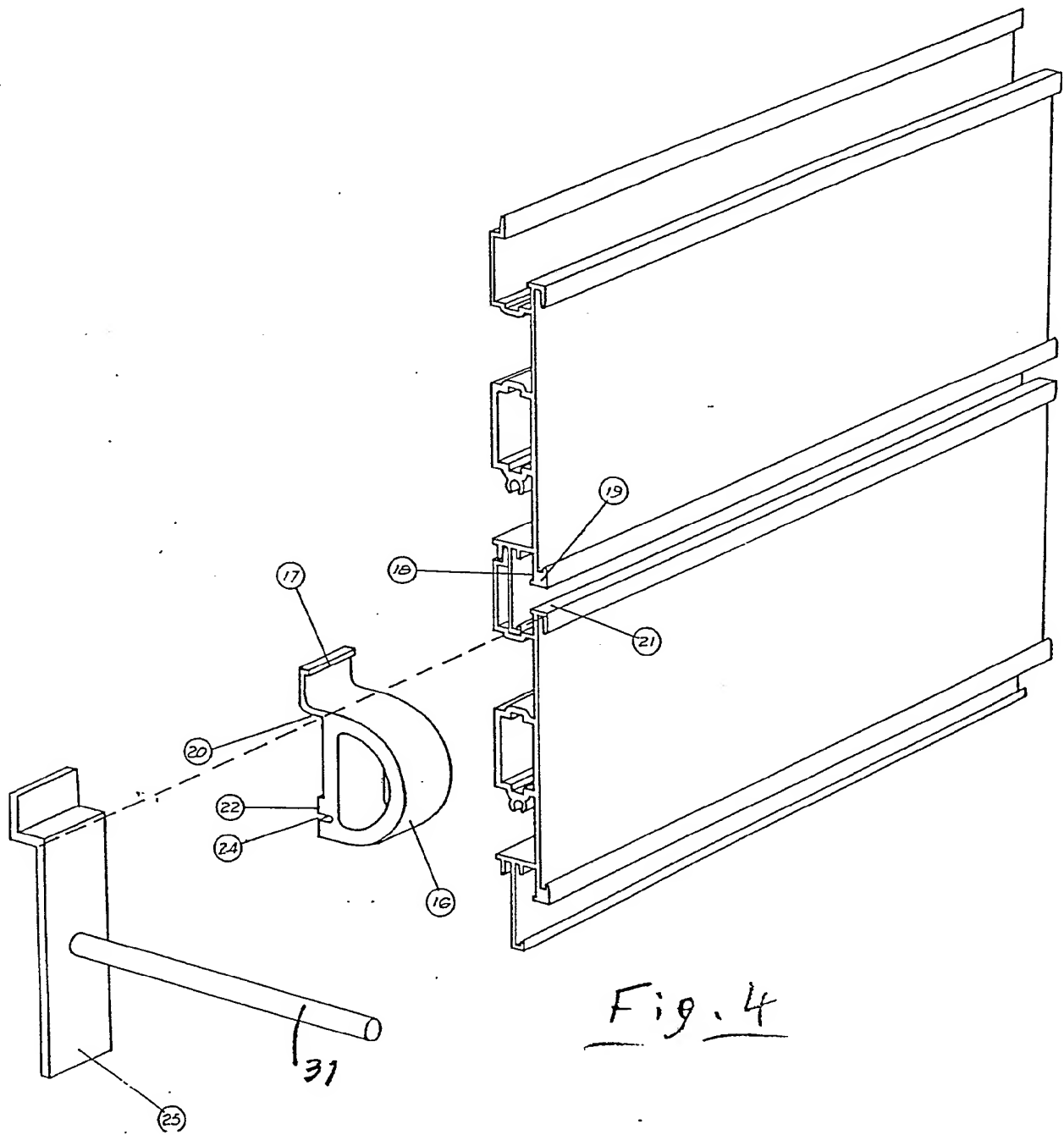
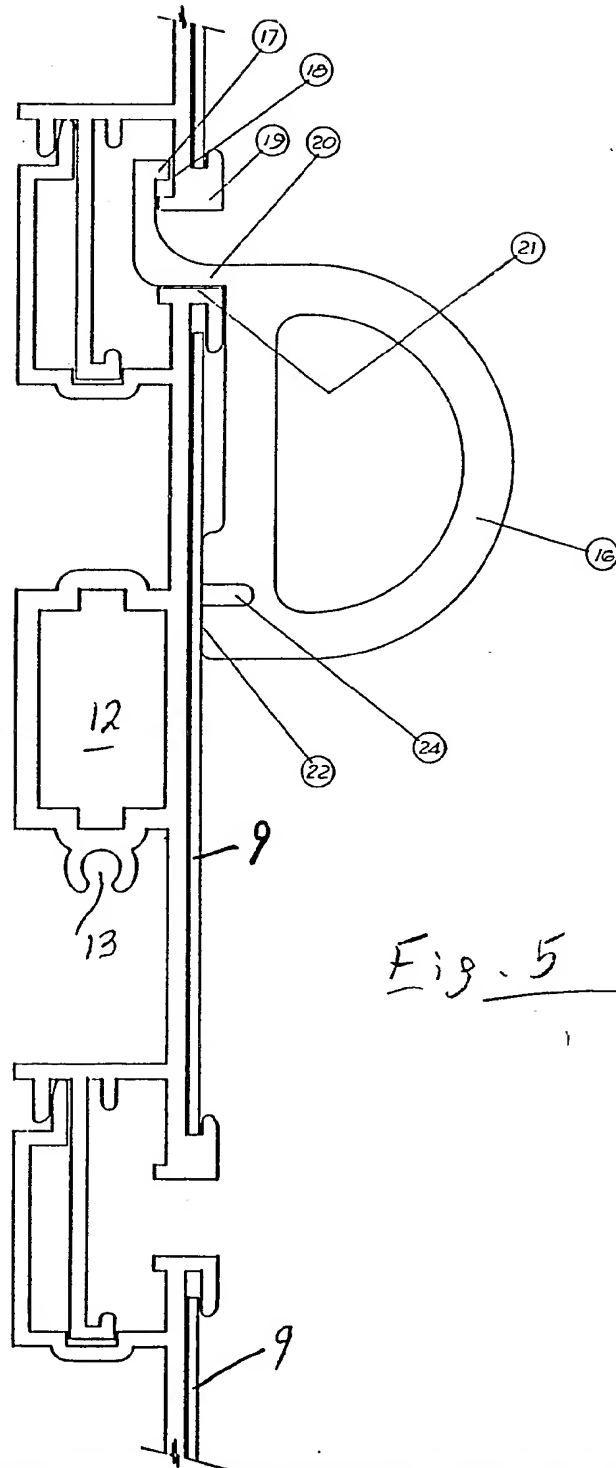


Fig. 4



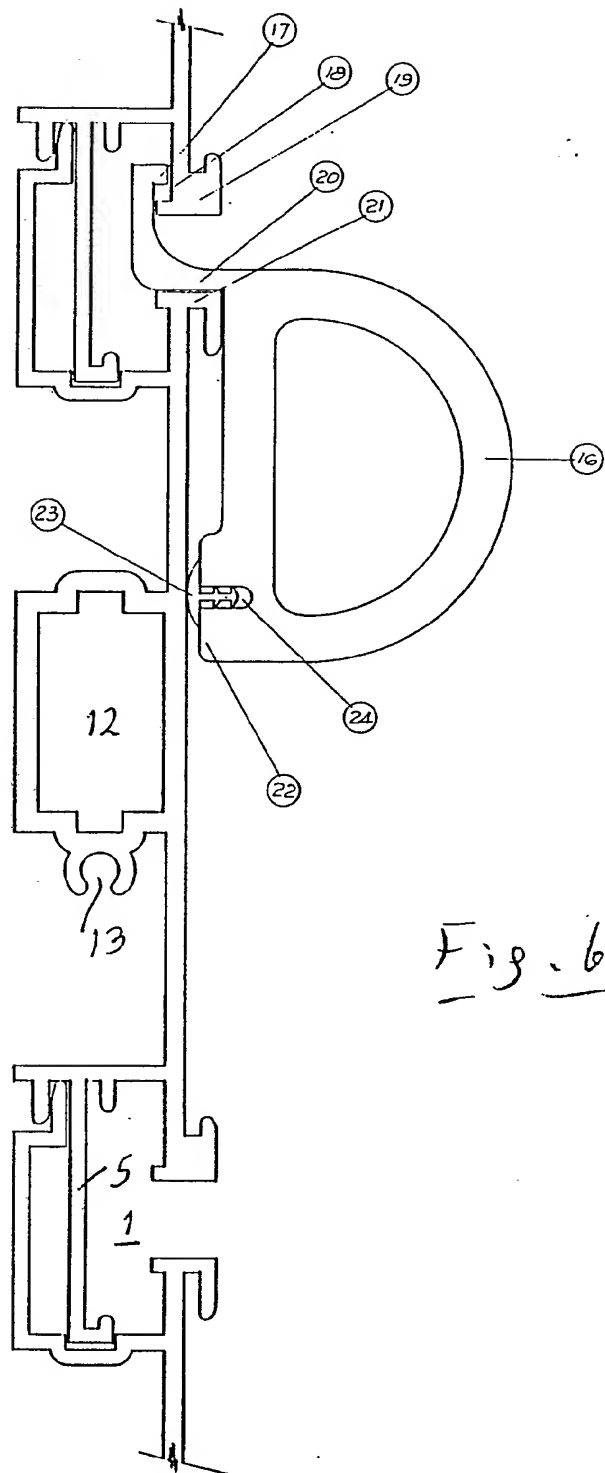
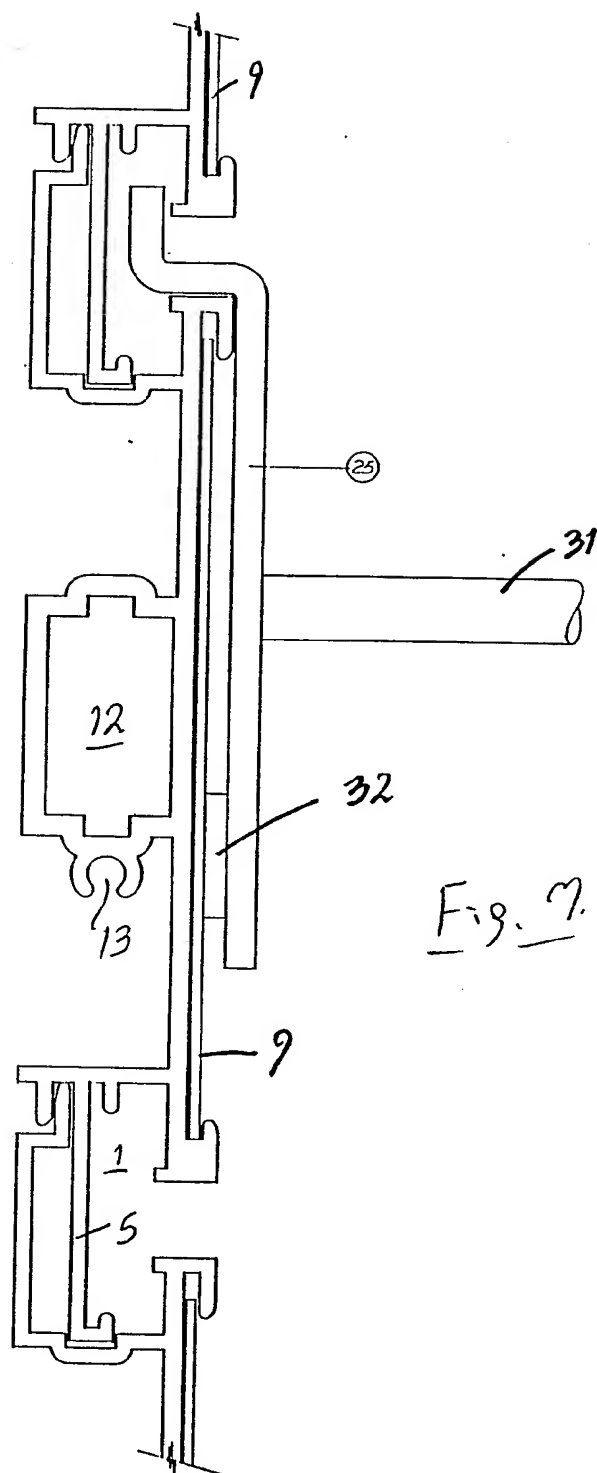
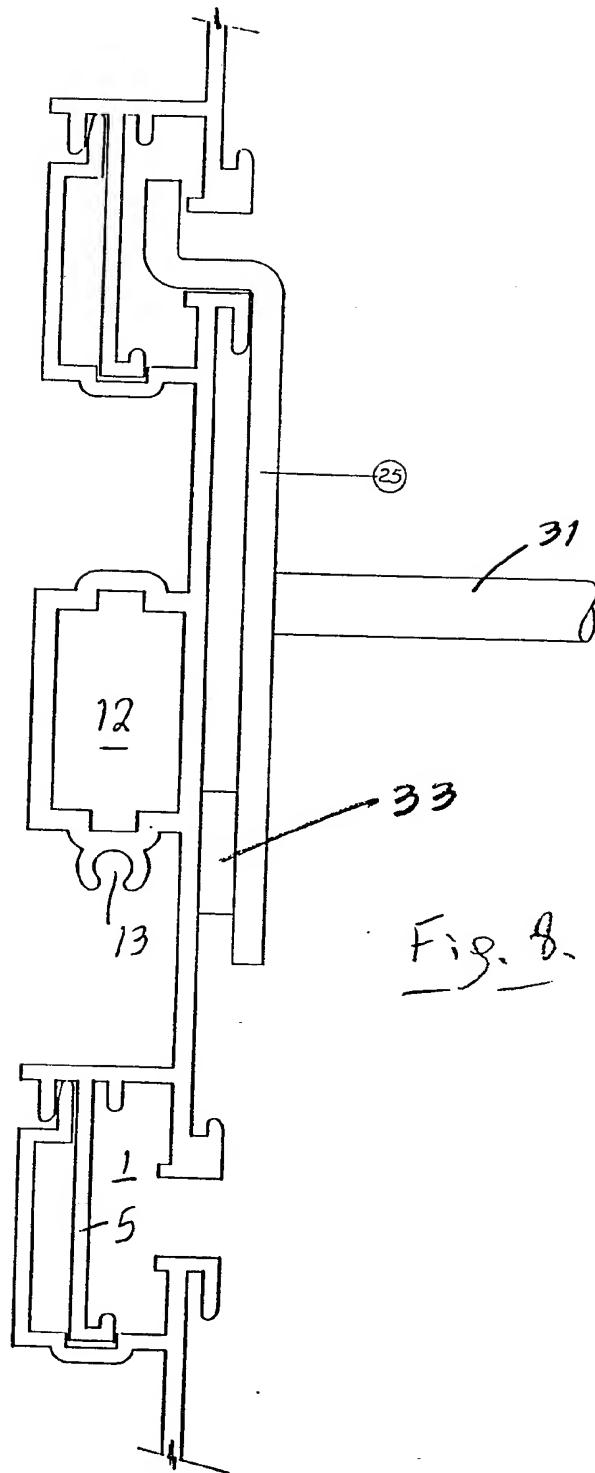


Fig. 6





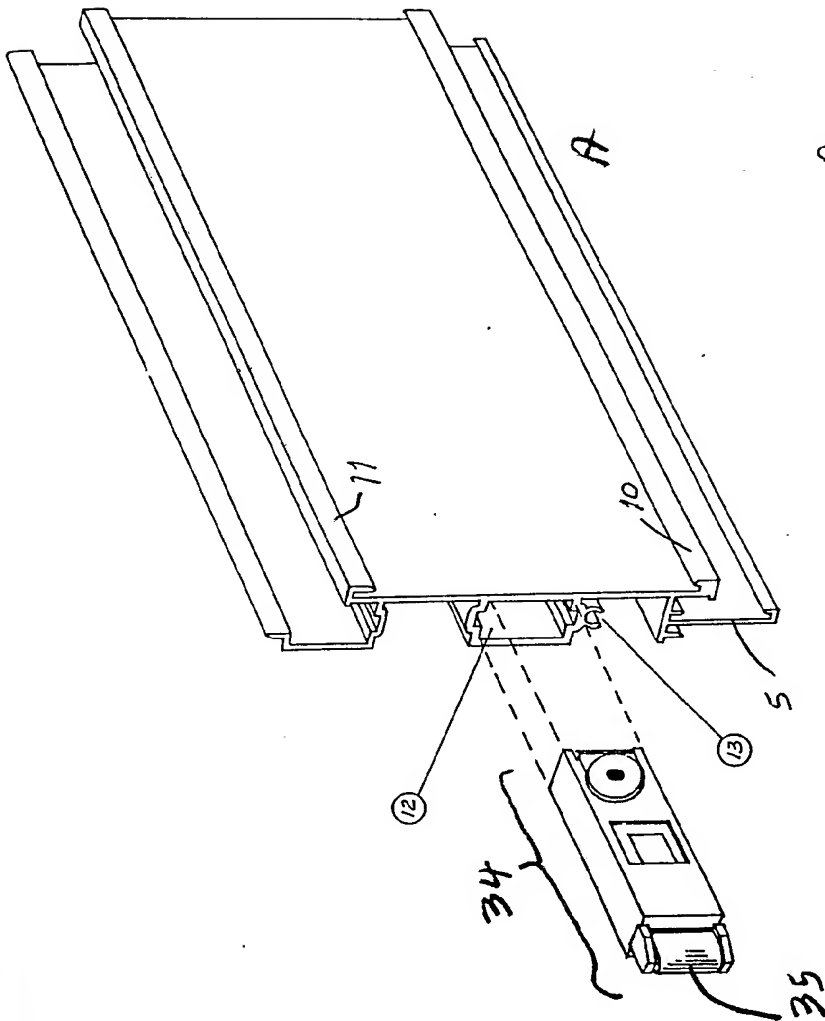
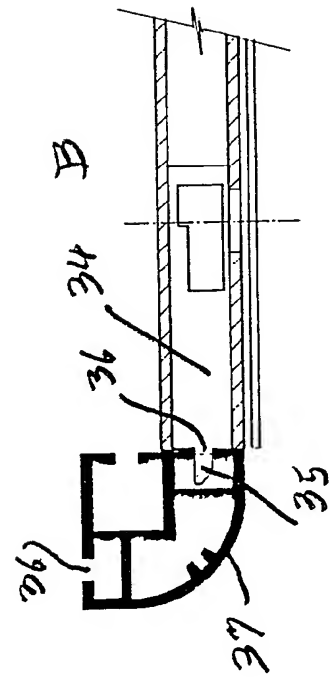
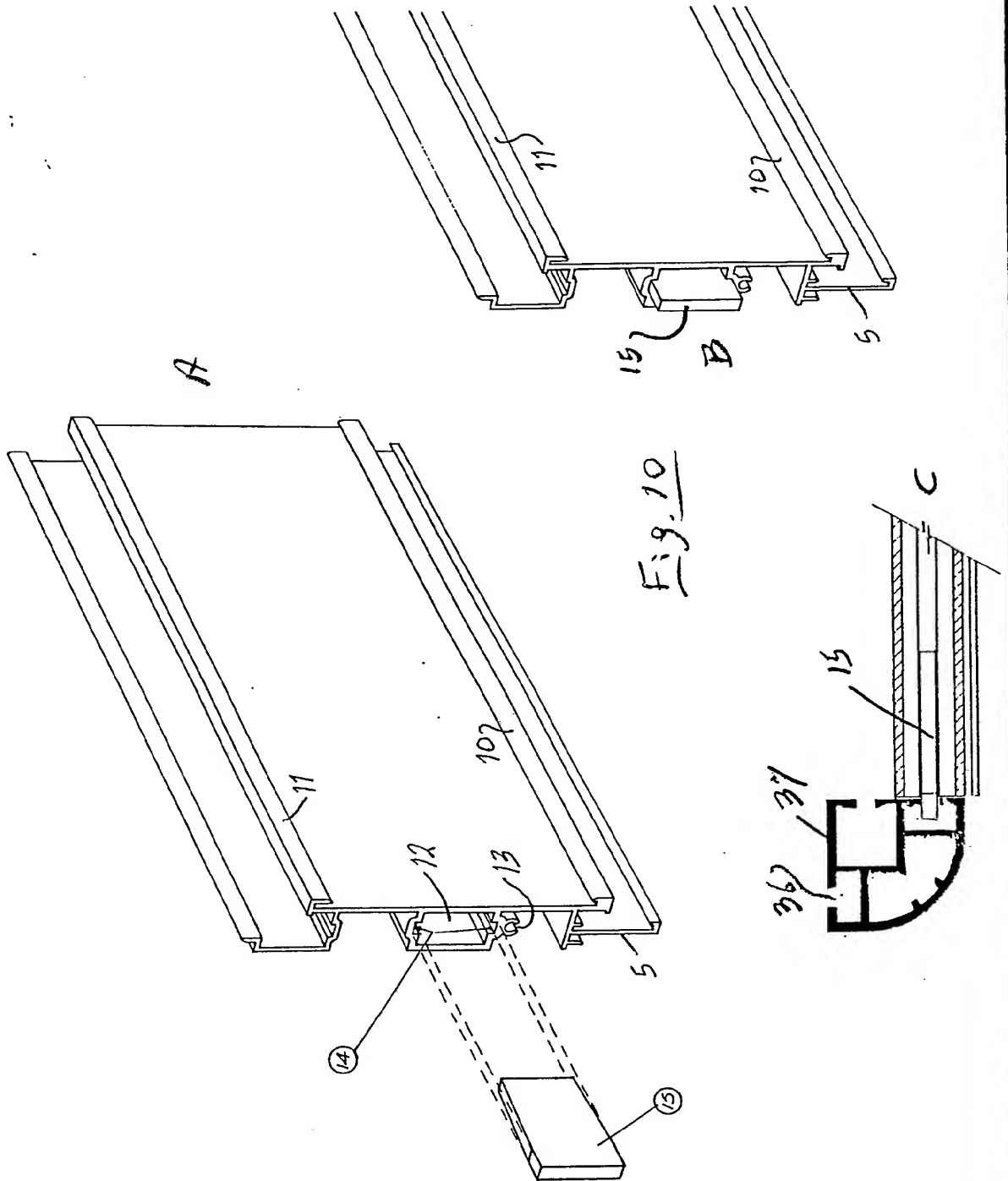


Fig. 9.





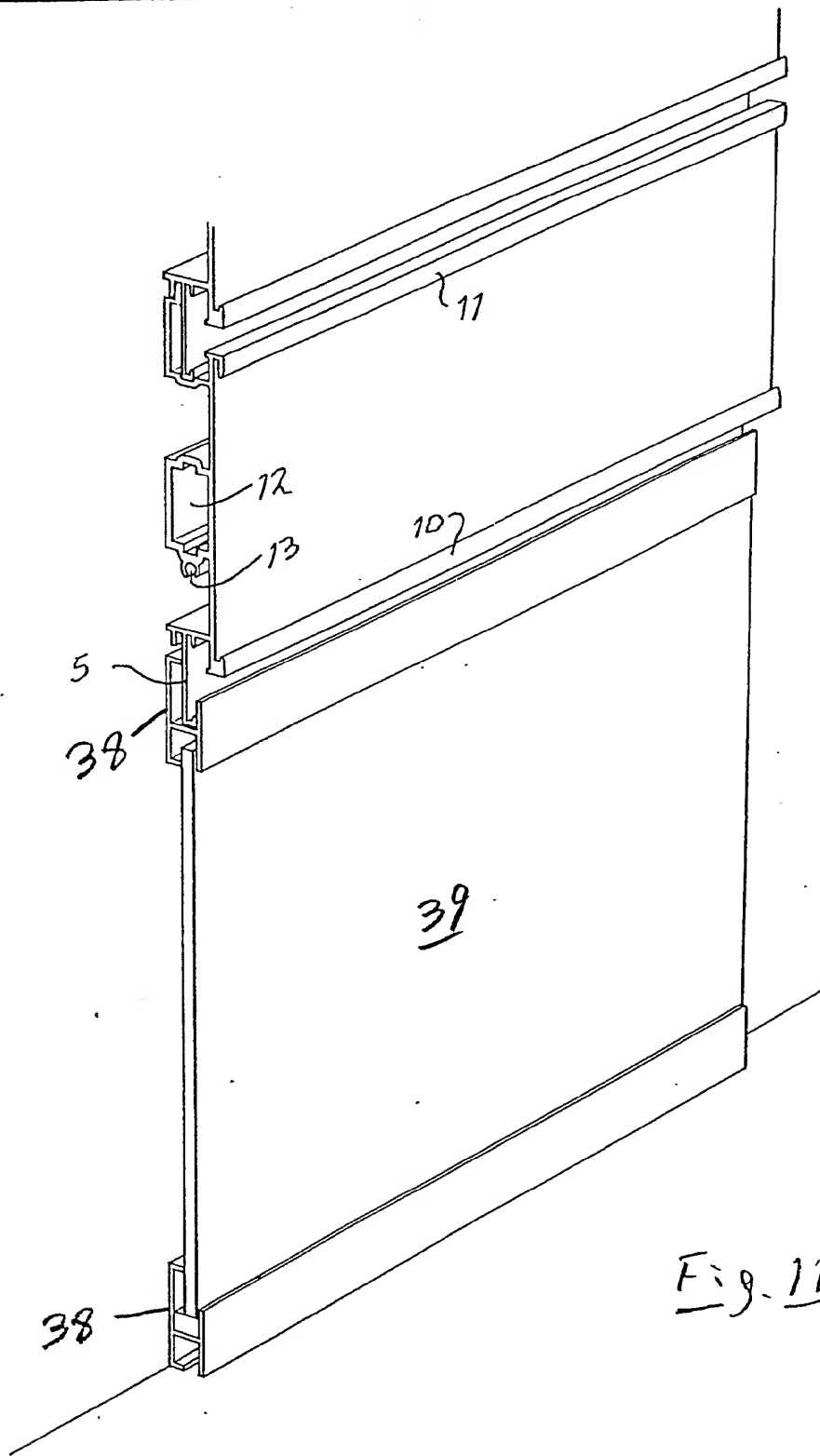
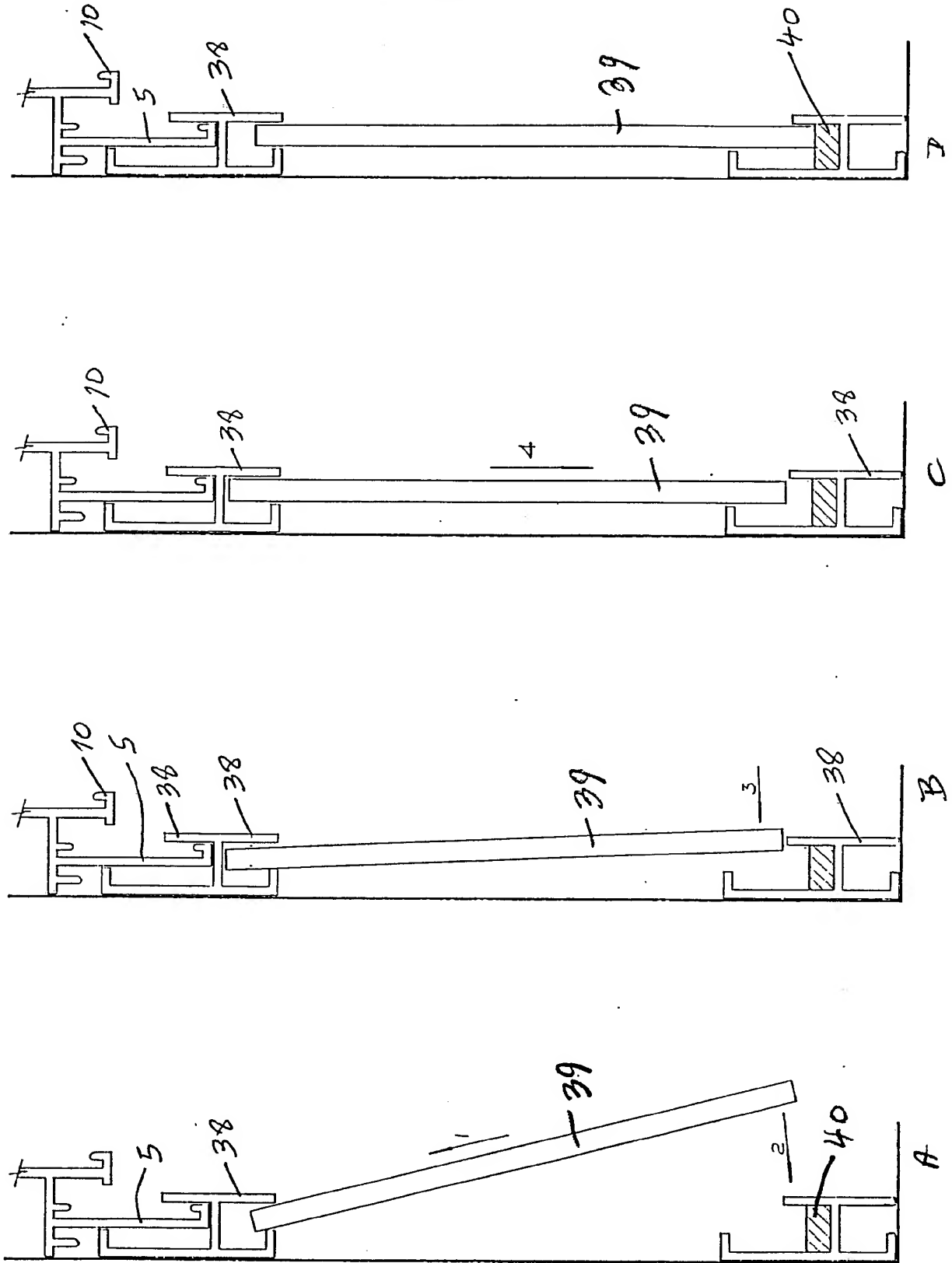


Fig. 11

Fig. 12





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 89 30 2718

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	DE-A-3 423 967 (JULIUS & AUGUST ERBSLÖH GmbH) * Claims 1,2,5; page 10, line 25 - page 12, line 20; figures 1-4 * ---	1,10	G 09 F 7/02 G 09 F 15/00
A	EP-A-0 253 683 (AUSTRALIAN SLATWALL INDUSTRIES PTY. LTD) * Claims 1,9; column 3, lines 5-27,48-58; figures 1-3 * ---	1,6,9-10	
A	GB-A-2 069 217 (HAZEL GROVE MUSIC CO. LTD) * Claims 1-3,5-6; page 1, lines 87-98; page 1, line 123 - page 2, line 20; figures 1-3 * ---	1-3	
A	DE-A-3 521 014 (R.F. SCHLOMS) * Claims 1,6-7; page 7, last paragraph - page 8, paragraph 4; figures 1-5 * -----	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			G 09 F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 27-06-1989	Examiner FRANSEN L.J.L.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document			